EN



VIBTRANSMITTER VT1000

USER MANUAL

EC SYSTEMS

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I. INTRODUCTION

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II. GENERAL INFORMATION

VIBTransmitter VT1000 is a universal module for condition monitoring of rotating machinery with constant and variable rotational speed.

The features of VT1000 are as follow:

- ICP® (IEPE) standard accelerometer input,
- 4..20 mA output proportional to signal estimate,
- vibration velocity or acceleration measurement,
- calculation of RMS or PEAK values,
- built-in connector for the AC voltage signal from the vibration sensor (10 V_{pp}),
- DIN rail mounting.

The system is a perfect solution for automated protection systems of rotating machines. The device can be integrated with the controller via the 4..20 mA current output. The 10 V_{pp} AC voltage output allows to control the vibration level using a portable vibration analyzer.

III. MODULE DESCRIPTION

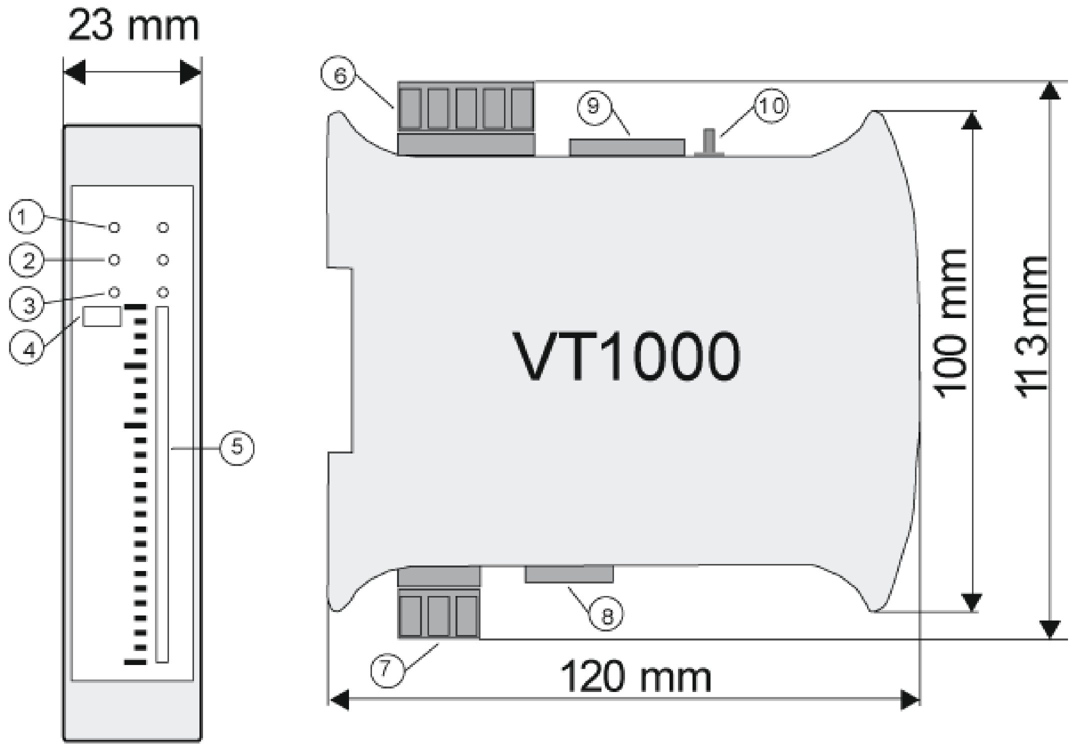


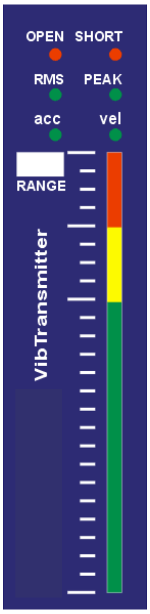
Figure 1 » VT1000 dimension

The functionalities of the connectors indicated on the *Figure 1* are as follow:

1. IEPE sensor circuit signalisation:
   - *open* – open-circuit or sensor failure
   - *short* – short-circuit or sensor failure
2. Signal estimate signalisation – one can choose form RMS or PEAK values; the choice is indicated by appropriate diode
3. Measured value signalisation – one can choose form velocity or acceleration
4. Alarm output indicators
5. Keyboard
6. Two-digit LED display
7. Power supply and sensor connector
8. 4..20 mA current loop and relay-outputs connector
9. Set of configurable switches (*SW2*)
10. Set of configurable switches (*SW1*)
11. SMB connector for voltage vibration signal

IV. FRONT PANEL DESCRIPTION

Measurement chain diagnostics for IEPE sensor



Red LEDs – indicator of the sensor status:

- *open* – open circuit or sensor failure
- *short* – short circuit or sensor failure

Green LEDs:

- indicator of the selected estimate:
  - *RMS* – RMS value of vibration signal
  - *PEAK* – maximum value of vibration signal (0-Peak)
- indicator of the selected measured value:
  - *acc* – acceleration
  - *vel* – velocity

Scaled diode measurement level indicator.

V. INSTALLATION AND USAGE

V.1. Mounting

VIBTransmitter VT1000 module is designed for mounting on 35mm DIN rail in an upright position. *Figure 2* presents the 3 modules of VT1000 mounted on a DIN rail.

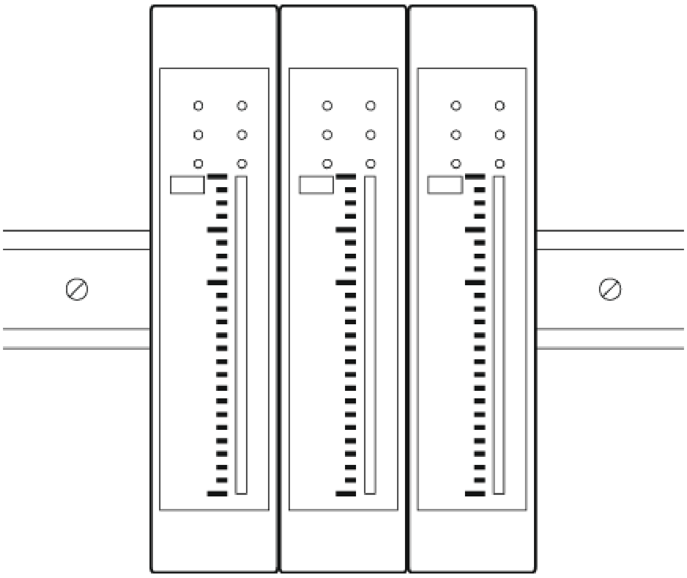


Figure 2 » Exemplary installation of 3 modules of VT1000 on a DIN rail

V.2. Galvanic isolation

VIBTransmitter VT1000 guarantees full galvanic isolation between power supply of the module with the sensor and the current loop in the case of external supply of the 4..20 mA current loop. *Figure 3* presents the schematic block of above mentioned isolation.

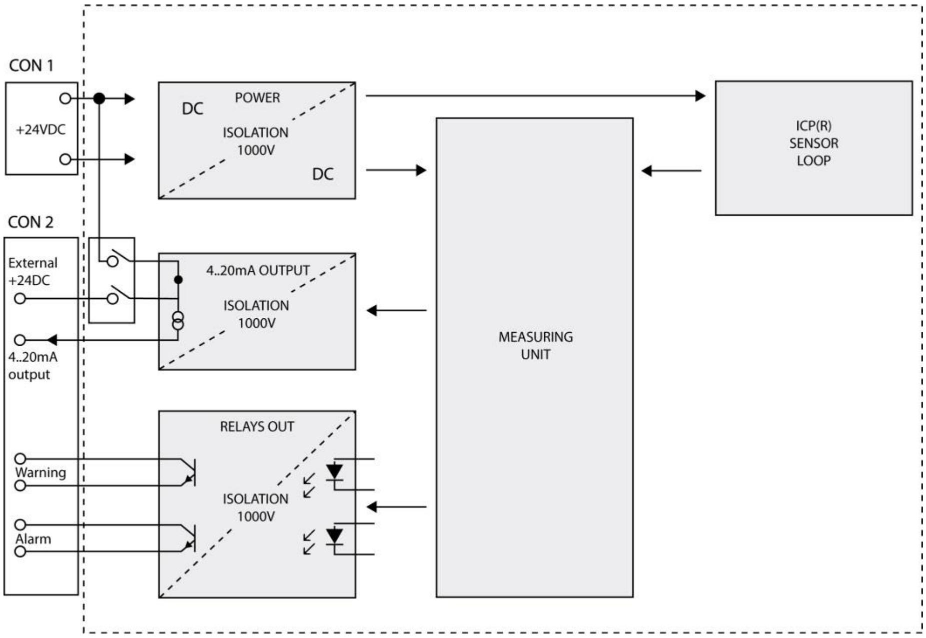


Figure 3 » VT1000 isolation

V.3. Electrical connectors

Description of the connectors is presented on the *Figure 4*.

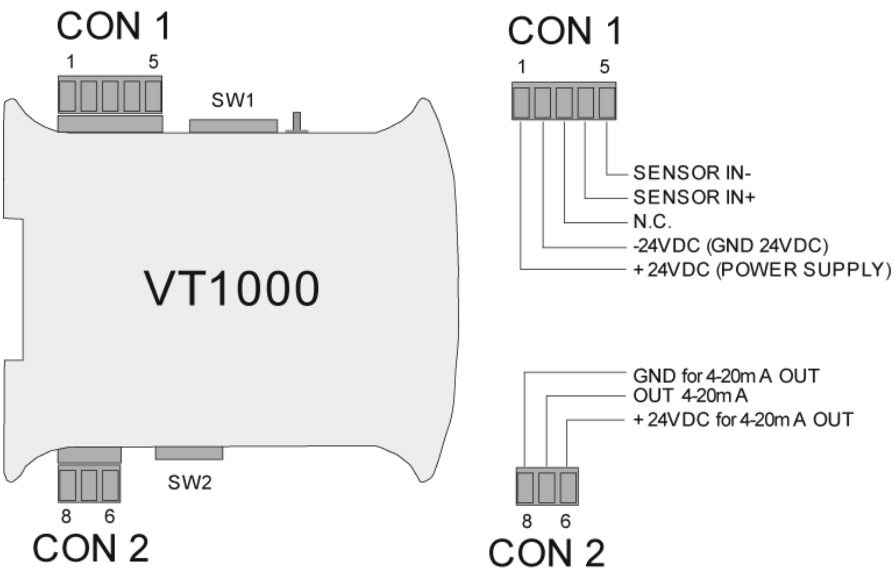


Figure 4 » VT1000 connectors

4..20 mA current connection is shown on the *Figure 5*.

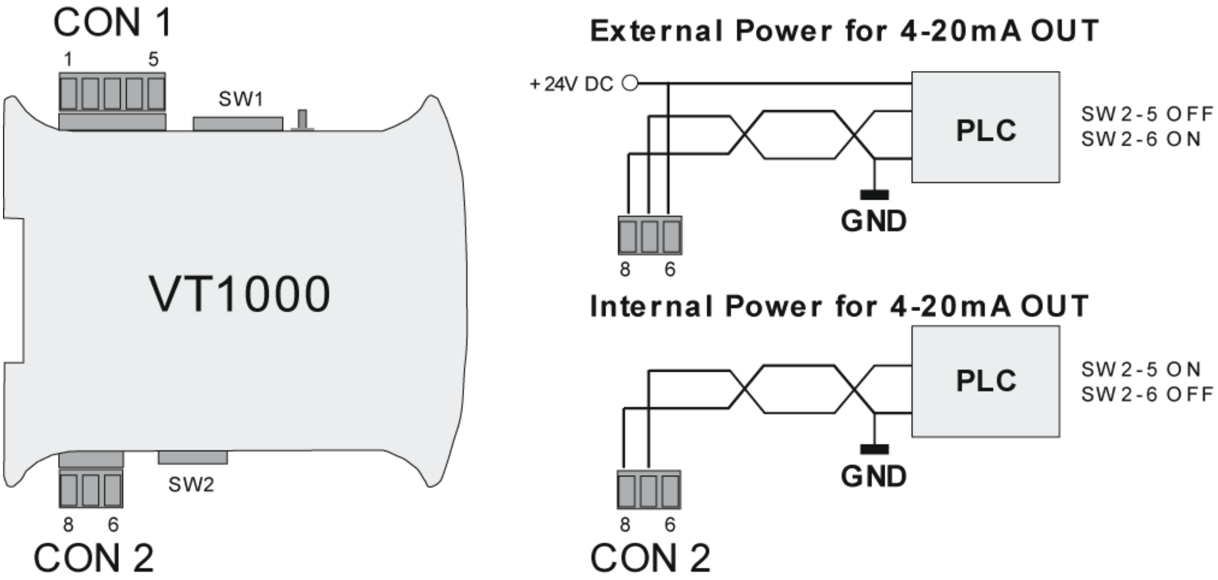


Figure 5 » VT1000 current loop

V.4. AC VOLTAGE OUTPUT

The usage of the voltage output of the module should be performed according to *Figure 6*.

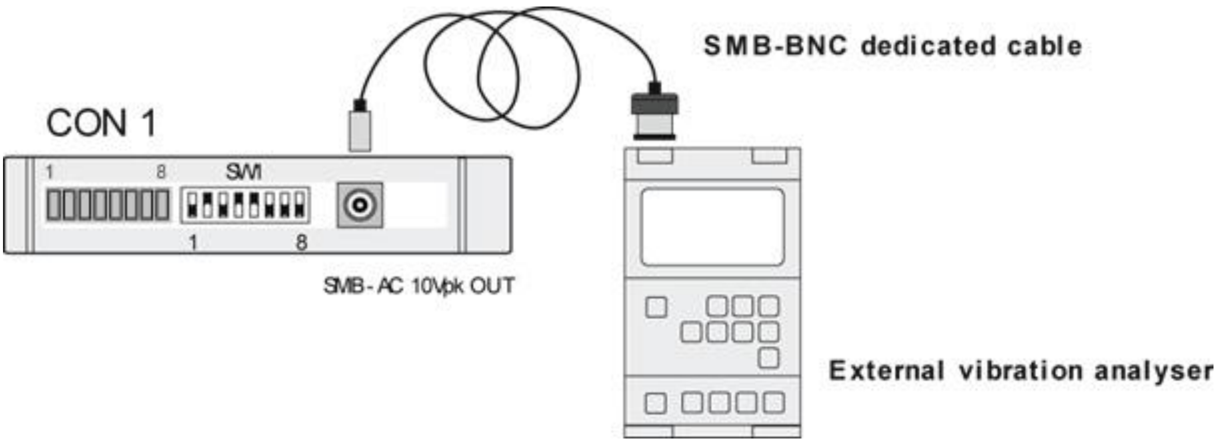


Figure 6 » VT1000 AC voltage output

V.5. ACTIVATION

After connecting the power, the VT1000 module enters into testing procedure. Subsequently all LEDs will flash for a short period of time. If everything is operating properly, then LED is pulsing with a frequency of approximately 1 Hz. Once the testing procedure is over, the device is ready to operate. If an error of a sensor circuit is detected, then corresponding LED will lit.

VI. MEASUREMENT PARAMETER CONFIGURATION

Measurement parameter configuration is set by proper set-up of configuration switches *SW1* and *SW2*. Description of switches *SW1* and *SW2* is presented in the following table and *Figure 7*:

Functions of configuration switches	
SW1 	*SW2* 
S1: • ON – HPF = 10 Hz • OFF – HPF = 3 Hz S2: ON – range 100 S3: ON – range 10 S4: ON – range 25 S5: ON –LPF = 1 kHz S6: ON –LPF = 10 kHz S7: ON – acceleration S8: ON – velocity	S1: • ON – range 10 • OFF – range 100 S2: • ON – range 25 • OFF – range 100 S3: • ON – acceleration • OFF – velocity S4: • ON – RMS • OFF – PEAK S5: ON – internal power supply +24 V for 4..20 mA S6: ON – external power supply for 4..20 mA

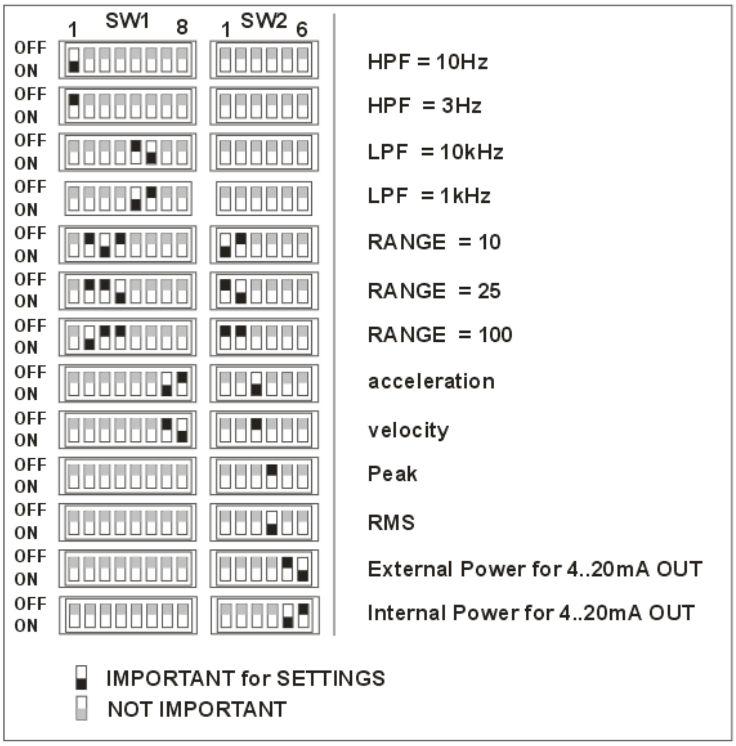


Figure 7 » Functions of configuration switches

Example:

Monitoring of the RMS of the vibration signal velocity, using 3 Hz high pass filter and 10 KHz low pass filter, for 100 mm/s range and internal power loop. The following configuration of the switches must be set:

SW1								*SW2*					
OFF	ON	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	ON	ON	OFF
1	2	3	4	5	6	7	8	1	2	3	4	5	6

WARNING!

The set-up of the switches configuration should be done on a switched off device. If the set-up was done on an operating module, it needs to be restarted in order to activate the new configuration.

VII. TECHNICAL PARAMETERS

The technical parameters of the VT1000 module are as follow:

- power supply..24 VDC (18..36 VDC)
- power consumption .... <4 W

- sensor type .... IEPE, 100 mV/g, 4,7 mA @ 20 V
- measured values...velocity, acceleration
- types of estimates .... RMS, 0-PEAK
- low-pass filter ....1/10 kHz, 24 dB/oct., 4th order
- high-pass filter ....3/10 Hz, 12 dB/oct., 2nd order
- isolation ....1 kVDC (2 or 3 kVDC optionally)
- current output ....2 or 3 wired 4..20 mA current loop
- voltage output ....AC, 10 V_{pp} max.
- operating temperature.. -20..+60°C
- operating relative humidity...<95% RH
- protection class...IP40
- dimensions... 23 x 100 x 120 mm (W x H x L)
- weight .... 150 g
- mounting ....35 mm DIN rail

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